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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,291	09/26/2003	Miwa Kozawa	031181	6427

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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11/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/670,291	Applicant(s) KOZAWA ET AL.	
	Examiner Daborah Chacko-Davis	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-5, 7-8, and 13-14, are rejected under 35 U.S.C. 102(a) as being anticipated by U. S. Patent No. 6,410,677 (Enoki et al., hereinafter referred to as Enoki).

Enoki, in the abstract, in col 2, lines 35-45, and lines 63-67, in col 3, lines 1-3, in col 4, lines 40-63, discloses a water-soluble composition for a coating material that includes a resin (water-soluble), a surfactant, and an optional organic solvent. Enoki does not refer to the material composition taught therein as "a resist pattern thickening material" however the material composition taught by Enoki comprises the same components required in the present material composition and is therefore expected to be capable of performing the same intended use. See *In re Hirao*, 535 F.2d 67, 190 USPQ 478, 481 (CCPA 1951) (claims 1, 2, 5, 13). Enoki, in col 2, lines 63-67, and in col 3, lines 1-30, discloses that the surfactant is either a non-ionic surfactant such as polyoxyethylene alkyl ether, or a cationic surfactant such as an alkyl amine salt, or an amphoteric surfactant such as betaine (claims 3-4). Enoki, in col 4, lines 38-46, discloses a resin that has a cyclic structure and is a heterocyclic polybenzoxazole resin (claims 7-8). Enoki, in col 4, lines 54-63, discloses that the organic solvent is a chain ether solvent viz., diethylene glycol dimethyl ether (claim 14).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-8, 13-18, are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Application Publication No. 2001-109165 (Kanda et al., hereinafter referred to as Kanda).

Kanda, in the abstract, in [0001], [0013], [0017], [0019], [0020], discloses a coating material that fattens the resist pattern (resist pattern thickening material) comprising a water-soluble resin, a non-ionic surfactant, and an organic solvent (claims 1-3, 5, and 13). Kanda, in [013], discloses that the water-soluble resin of the coating material is a polyvinyl alcohol (claim 6). Kanda, in [0013], discloses that the water-soluble resin is a heterocyclic compound such as a polyvinyl pyrrolidone (has a cyclic structure) (claims 7-8). Kanda, in [0020], discloses that the organic solvent is an alcohol solvent (claim 14). Kanda, in the abstract, in [0002], [0011], [0012], [0013], [0019], [0020], [0033], discloses forming a resist pattern (resist pattern to be thickened) for a semiconductor device, forming a coating material (enveloping layer, reference 3 of figures 1, and 2) on the formed resist pattern, wherein the coating material (resist pattern thickening material) fattens the resist pattern, said coating material includes a resin, a surfactant, and an organic solvent (claims 15-16, and 18). Kanda, in [0022], [0023], [0024], discloses that the developing processing is performed after the formation of the coating material on the resist pattern (claim 17).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 19-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Application Publication No. 2001-109165 (Kanda et al., hereinafter referred to as Kanda) in view of U. S. Patent No. 6,319,853 (Ishibashi et al., hereinafter referred to as Ishibashi).

Kanda, in the abstract, in [0002], [0011], [0012], [0013], [0019], [0020], [0033], discloses forming a resist pattern (resist pattern to be thickened) for a semiconductor device, forming a coating material (enveloping layer, reference 3 of figures 1, and 2) on the formed resist pattern, wherein the coating material (resist pattern thickening material) fattens the resist pattern, said coating material includes a resin, a surfactant, and an organic solvent (claim 19). Kanda, in [0011], discloses that the resist material (for forming the resist pattern, the resist pattern to be thickened) is an acrylic resist (claim 20).

The difference between the claims and Kanda is that Kanda does not disclose using the resist pattern to pattern the underlying layer.

Ishibashi, in col 24, lines 2-25, discloses that the thickened resist pattern (second resist pattern, after developing the coating material formed on the resist pattern) is used as an etching mask to etch the underlying layer (semiconductor substrate).

Therefore, it would be obvious to a skilled to employing the etch process suggested by Ishibashi because Kanda, in [0002], discloses that the resist pattern formed can be used as an etching resist mask to manufacture semiconductor devices and circuit boards.

Response to Arguments

7. Applicant's arguments filed August 21, 2007, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action (paper no. 20060817) are maintained.

A) Applicants argue that Enoki et al., does not disclose a resist pattern thickening material which is capable of thickening an ArF resist pattern to be thickened.

Enoki et al., teaches a coating material composition that has a resin and a surfactant and an organic solvent material as recited in claim 1 i.e., Enoki et al's coating material composition comprises the same components as the claimed resist pattern thickening material and is therefore capable of performing the claimed task. In response to applicant's argument that Enoki et al., does not disclose a resist pattern thickening material which is capable of thickening an ArF resist pattern to be thickened a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the

claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

B) Applicants argue that Kanda et al., only uses a KrF resist, and that Kanda et al.'s composition cannot thicken an ArF resist.

Kanda, in [0011], teaches that the photoresist composition used for making the resist pattern that is to be thickened can be an acrylic resin. An acrylic resin photoresist is an ArF resist. Therefore the resist pattern to be thickened of Kanda is an ArF resist.

C) Applicants argue that Ishibashi et al., does not teach a process which uses an ArF resist.

Ishibashi is not depended upon to disclose the ArF resist pattern. Kanda, in [0011], [0012, and [0013], discloses the use of an acrylic resist i.e., an ArF resist to form a resist pattern to be thickened.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd



November 13, 2007.



JOHN A. MCPHERSON
PRIMARY EXAMINER